

TECHNICAL INFORMATION ON BUILDING MATERIALS  
FOR USE IN THE DESIGN OF LOW-COST HOUSING

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THE NATIONAL BUREAU OF STANDARDS  
UNITED STATES DEPARTMENT OF COMMERCE  
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Thermal Insulation

Comparative estimated fuel savings in heating dwelling  
houses equipped with various means  
for reducing heat loss

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This is a brief digest of a section of Bureau of Standards Circular No. 576 (October 17, 1929), "Thermal Insulation of Buildings",<sup>1</sup> covering estimated fuel savings in the heating of dwelling houses made possible through application of weatherstripping, storm sash and insulation. The estimated savings are based on air infiltration data from The American Society of Heating and Ventilating Engineer's Guide, and heat conductivity values determined from tests conducted by the National Bureau of Standards on a large number of commercial insulating materials at ordinary temperatures.

Although the estimated fuel savings are only approximate on account of wide variations in sizes of cracks and clearances around window frames, sash and doors, such data are useful to indicate the advantages of applying heat loss preventives to the house structure.

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<sup>1</sup>Available from Superintendent of Documents, Government Printing Office, Washington, D. C. (Price 5 cents)



TABLE I

Approximate percentages of fuel savings resulting from  
the application of heat loss preventives  
to a house not so protected.

Construction (conditions assumed)*	:	Approximate
Walls and Roof	Windows and Doors	Savings
No insulation	: Weatherstripping only	: 15 to 20
No insulation	: Storm sash and weatherstripping	: 25 to 30
$\frac{1}{2}$ " insulation	: No storm sash or weatherstripping	: 20 to 30
$\frac{1}{2}$ " insulation	: Weatherstripping only	: About 40
$\frac{1}{2}$ " insulation	: Storm sash only	: About 50
1" insulation	: No storm sash or weatherstripping	: 30 to 40
1" insulation	: Weatherstripping only	: About 50
1" insulation	: Storm sash only	: About 60
:	:	:

TABLE II

Approximate percentages of fuel savings resulting from  
the addition of heat loss preventives  
to a weatherstripped house.

Construction (conditions assumed)*	:	Approximate
Walls and Roof	Windows and Doors	Savings
No insulation	: Storm sash	: 10 to 15
$\frac{1}{2}$ " insulation	: No storm sash	: 25 to 35
$\frac{1}{2}$ " insulation	: Storm sash	: 40 to 45
1" insulation	: No storm sash	: 35 to 45
1" insulation	: Storm sash	: 50 to 55
:	:	:

\*Windows and doors: Aggregate area of such openings assumed to be 1/5 of total side-wall surface.

Wind velocity: Heat loss through windows and doors assumed equal to loss of heat resulting from a 5-mile wind striking the wall perpendicularly; this being a rough average of infiltration conditions prevailing throughout the country.

Insulating material: A typical commercial insulating material was assumed applied to walls and roof or attic.

\*\*The percentages of fuel savings shown in Table II are approximately 15% to 20% less than those in Table I, since they are based on the amount of fuel consumed in heating a house equipped with weatherstripping, whereas those shown in Table I are based on a house not equipped with weatherstripping.

